What is claimed is:

1. A method of forming a tubular liner within a preexisting structure, comprising:
positioning a tubular assembly within the preexisting structure; and
radially expanding and plastically deforming the tubular assembly within the preexisting structure;
wherein, prior to the radial expansion and plastic deformation of the tubular assembly, a predetermined portion of the tubular assembly has a lower yield point than another portion of the tubular assembly.

2. The method of claim 1, wherein the predetermined portion of the tubular assembly has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

3. The method of claim 1, wherein the predetermined portion of the tubular assembly has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

4. The method of claim 1, wherein the predetermined portion of the tubular assembly has a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

5. The method of claim 1, wherein the predetermined portion of the tubular assembly has a larger inside diameter after the radial expansion and plastic deformation than other portions of the tubular assembly.

6. The method of claim 5, further comprising:
positioning another tubular assembly within the preexisting structure in overlapping relation to the tubular assembly; and
radially expanding and plastically deforming the other tubular assembly within the preexisting structure;
wherein, prior to the radial expansion and plastic deformation of the tubular assembly, a predetermined portion of the other tubular assembly has a lower yield point than another portion of the other tubular assembly.

7. The method of claim 6, wherein the inside diameter of the radially expanded and plastically deformed other portion of the tubular assembly is equal to the inside diameter of

the radially expanded and plastically deformed other portion of the other tubular assembly.

8. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises an end portion of the tubular assembly.

9. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises a plurality of predetermined portions of the tubular assembly.

10. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises a plurality of spaced apart predetermined portions of the tubular assembly.

11. The method of claim 1, wherein the other portion of the tubular assembly comprises an end portion of the tubular assembly.

12. The method of claim 1, wherein the other portion of the tubular assembly comprises a plurality of other portions of the tubular assembly.

13. The method of claim 1, wherein the other portion of the tubular assembly comprises a plurality of spaced apart other portions of the tubular assembly.

14. The method of claim 1, wherein the tubular assembly comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

15. The method of claim 14, wherein the tubular couplings comprise the predetermined portions of the tubular assembly; and wherein the tubular members comprise the other portion of the tubular assembly.

16. The method of claim 14, wherein one or more of the tubular couplings comprise the predetermined portions of the tubular assembly.

17. The method of claim 14, wherein one or more of the tubular members comprise the predetermined portions of the tubular assembly.

18. The method of claim 1, wherein the predetermined portion of the tubular assembly defines one or more openings.

19. The method of claim 18, wherein one or more of the openings comprise slots.

20. The method of claim 18, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

21. The method of claim 1, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

22. The method of claim 1, wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

23. The method of claim 1, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

24. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

25. The method of claim 24, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

26. The method of claim 24, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

27. The method of claim 24, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.48.

28. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

29. The method of claim 28, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic

deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

30. The method of claim 28, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

31. The method of claim 28, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.04.

32. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

33. The method of claim 32, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.92.

34. The method of claim 1, wherein the predetermined portion of the tubular assembly comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

35. The method of claim 34, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.34.

36. The method of claim 1, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

37. The method of claim 1, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

38. The method of claim 1, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about

1.48.

39. The method of claim 1, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

40. The method of claim 1, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

41. The method of claim 1, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.04.

42. The method of claim 1, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.92.

43. The method of claim 1, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.34.

44. The method of claim 1, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

45. The method of claim 1, wherein the yield point of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about 47.6 ksi to about 61.7 ksi.

46. The method of claim 1, wherein the expandability coefficient of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is greater than 0.12.

47. The method of claim 1, wherein the expandability coefficient of the predetermined

portion of the tubular assembly is greater than the expandability coefficient of the other portion of the tubular assembly.

48. The method of claim 1, wherein the tubular assembly comprises a wellbore casing.

49. The method of claim 1, wherein the tubular assembly comprises a pipeline.

50. The method of claim 1, wherein the tubular assembly comprises a structural support.

51. An expandable tubular member comprising a steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

52. The tubular member of claim 51, wherein a yield point of the tubular member is at most about 46.9 ksi prior to a radial expansion and plastic deformation; and wherein a yield point of the tubular member is at least about 65.9 ksi after the radial expansion and plastic deformation.

53. The tubular member of claim 51, wherein the yield point of the tubular member after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the tubular member prior to the radial expansion and plastic deformation.

54. The tubular member of claim 51, wherein the anisotropy of the tubular member, prior to a radial expansion and plastic deformation, is about 1.48.

55. The tubular member of claim 51, wherein the tubular member comprises a wellbore casing.

56. The tubular member of claim 51, wherein the tubular member comprises a pipeline.

57. The tubular member of claim 51, wherein the tubular member comprises a structural support.

58. An expandable tubular member comprising a steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

59. The tubular member of claim 58, wherein a yield point of the tubular member is at most about 57.8 ksi prior to a radial expansion and plastic deformation; and wherein the

yield point of the tubular member is at least about 74.4 ksi after the radial expansion and plastic deformation.

60. The tubular member of claim 58, wherein a yield point of the of the tubular member after a radial expansion and plastic deformation is at least about 28 % greater than the yield point of the tubular member prior to the radial expansion and plastic deformation.

61. The tubular member of claim 58, wherein the anisotropy of the tubular member, prior to a radial expansion and plastic deformation, is about 1.04.

62. The tubular member of claim 58, wherein the tubular member comprises a wellbore casing.

63. The tubular member of claim 58, wherein the tubular member comprises a pipeline.

64. The tubular member of claim 58, wherein the tubular member comprises a structural support.

65. An expandable tubular member comprising a steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

66. The tubular member of claim 65, wherein the anisotropy of the tubular member, prior to a radial expansion and plastic deformation, is about 1.92.

67. The tubular member of claim 65, wherein the tubular member comprises a wellbore casing.

68. The tubular member of claim 65, wherein the tubular member comprises a pipeline.

69. The tubular member of claim 65, wherein the tubular member comprises a structural support.

70. An expandable tubular member comprising a steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

71. The tubular member of claim 70, wherein the anisotropy of the tubular member, prior to a radial expansion and plastic deformation, is about 1.34.

72. The tubular member of claim 70, wherein the tubular member comprises a wellbore casing.

73. The tubular member of claim 70, wherein the tubular member comprises a pipeline.

74. The tubular member of claim 70, wherein the tubular member comprises a structural support.

75. An expandable tubular member, wherein the yield point of the expandable tubular member is at most about 46.9 ksi prior to a radial expansion and plastic deformation; and wherein the yield point of the expandable tubular member is at least about 65.9 ksi after the radial expansion and plastic deformation.

76. The tubular member of claim 75, wherein the tubular member comprises a wellbore casing.

77. The tubular member of claim 75, wherein the tubular member comprises a pipeline.

78. The tubular member of claim 75, wherein the tubular member comprises a structural support.

79. An expandable tubular member, wherein a yield point of the expandable tubular member after a radial expansion and plastic deformation is at least about 40 % greater than the yield point of the expandable tubular member prior to the radial expansion and plastic deformation.

80. The tubular member of claim 79, wherein the tubular member comprises a wellbore casing.

81. The tubular member of claim 79, wherein the tubular member comprises a pipeline.

82. The tubular member of claim 79, wherein the tubular member comprises a structural support.

83. An expandable tubular member, wherein the anisotropy of the expandable tubular member, prior to the radial expansion and plastic deformation, is at least about 1.48.

84. The tubular member of claim 83, wherein the tubular member comprises a wellbore casing.

85. The tubular member of claim 83, wherein the tubular member comprises a pipeline.

86. The tubular member of claim 83, wherein the tubular member comprises a structural support.

87. An expandable tubular member, wherein the yield point of the expandable tubular member is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the expandable tubular member is at least about 74.4 ksi after the radial expansion and plastic deformation.

88. The tubular member of claim 87, wherein the tubular member comprises a wellbore casing.

89. The tubular member of claim 87, wherein the tubular member comprises a pipeline.

90. The tubular member of claim 87, wherein the tubular member comprises a structural support.

91. An expandable tubular member, wherein the yield point of the expandable tubular member after a radial expansion and plastic deformation is at least about 28 % greater than the yield point of the expandable tubular member prior to the radial expansion and plastic deformation.

92. The tubular member of claim 91, wherein the tubular member comprises a wellbore casing.

93. The tubular member of claim 91, wherein the tubular member comprises a pipeline.

94. The tubular member of claim 91, wherein the tubular member comprises a structural support.

95. An expandable tubular member, wherein the anisotropy of the expandable tubular member, prior to the radial expansion and plastic deformation, is at least about 1.04.

96. The tubular member of claim 95, wherein the tubular member comprises a wellbore casing.

97. The tubular member of claim 95, wherein the tubular member comprises a pipeline.

98. The tubular member of claim 95, wherein the tubular member comprises a structural support.

99. An expandable tubular member, wherein the anisotropy of the expandable tubular member, prior to the radial expansion and plastic deformation, is at least about 1.92.

100. The tubular member of claim 99, wherein the tubular member comprises a wellbore casing.

101. The tubular member of claim 99, wherein the tubular member comprises a pipeline.

102. The tubular member of claim 99, wherein the tubular member comprises a structural support.

103. An expandable tubular member, wherein the anisotropy of the expandable tubular member, prior to the radial expansion and plastic deformation, is at least about 1.34.

104. The tubular member of claim 103, wherein the tubular member comprises a wellbore casing.

105. The tubular member of claim 103, wherein the tubular member comprises a pipeline.

106. The tubular member of claim 103, wherein the tubular member comprises a structural support.

107. An expandable tubular member, wherein the anisotropy of the expandable tubular member, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

108. The tubular member of claim 107, wherein the tubular member comprises a wellbore casing.

109. The tubular member of claim 107, wherein the tubular member comprises a pipeline.

110. The tubular member of claim 107, wherein the tubular member comprises a structural support.

111. An expandable tubular member, wherein the yield point of the expandable tubular member, prior to the radial expansion and plastic deformation, ranges from about 47.6 ksi to about 61.7 ksi.

112. The tubular member of claim 111, wherein the tubular member comprises a wellbore casing.

113. The tubular member of claim 111, wherein the tubular member comprises a pipeline.

114. The tubular member of claim 111, wherein the tubular member comprises a structural support.

115. An expandable tubular member, wherein the expandability coefficient of the expandable tubular member, prior to the radial expansion and plastic deformation, is greater than 0.12.

116. The tubular member of claim 115, wherein the tubular member comprises a wellbore casing.

117. The tubular member of claim 115, wherein the tubular member comprises a pipeline.

118. The tubular member of claim 115, wherein the tubular member comprises a structural support.

119. An expandable tubular member, wherein the expandability coefficient of the expandable tubular member is greater than the expandability coefficient of another portion of the expandable tubular member.

120. The tubular member of claim 119, wherein the tubular member comprises a wellbore casing.

121. The tubular member of claim 119, wherein the tubular member comprises a pipeline.

122. The tubular member of claim 119, wherein the tubular member comprises a structural support.

123. An expandable tubular member, wherein the tubular member has a higher ductility and a lower yield point prior to a radial expansion and plastic deformation than after the radial expansion and plastic deformation.

124. The tubular member of claim 123, wherein the tubular member comprises a wellbore casing.

125. The tubular member of claim 123, wherein the tubular member comprises a pipeline.

126. The tubular member of claim 123, wherein the tubular member comprises a structural support.

127. A method of radially expanding and plastically deforming a tubular assembly comprising a first tubular member coupled to a second tubular member, comprising:

radially expanding and plastically deforming the tubular assembly within a preexisting structure; and

using less power to radially expand each unit length of the first tubular member than to radially expand each unit length of the second tubular member.

128. The method of claim 127, wherein the tubular member comprises a wellbore casing.

129. The method of claim 127, wherein the tubular member comprises a pipeline.

130. The method of claim 127, wherein the tubular member comprises a structural support.

131. A system for radially expanding and plastically deforming a tubular assembly comprising a first tubular member coupled to a second tubular member, comprising:

means for radially expanding the tubular assembly within a preexisting structure; and

means for using less power to radially expand each unit length of the first tubular member than to radially expand each unit length of the second tubular member.

132. The system of claim 131, wherein the tubular member comprises a wellbore casing.

133. The system of claim 131, wherein the tubular member comprises a pipeline.

134. The system of claim 131, wherein the tubular member comprises a structural support.

135. A method of manufacturing a tubular member, comprising:
processing a tubular member until the tubular member is characterized by one or more intermediate characteristics;
positioning the tubular member within a preexisting structure; and
processing the tubular member within the preexisting structure until the tubular member is characterized one or more final characteristics.

136. The method of claim 135, wherein the tubular member comprises a wellbore casing.

137. The method of claim 135, wherein the tubular member comprises a pipeline.

138. The method of claim 135, wherein the tubular member comprises a structural support.

139. The method of claim 135, wherein the preexisting structure comprises a wellbore that traverses a subterranean formation.

140. The method of claim 135, wherein the characteristics are selected from a group consisting of yield point and ductility.

141. The method of claim 135, wherein processing the tubular member within the preexisting structure until the tubular member is characterized one or more final characteristics comprises:
radially expanding and plastically deforming the tubular member within the preexisting structure.

142. An apparatus, comprising:
an expandable tubular assembly; and
an expansion device coupled to the expandable tubular assembly;

wherein a predetermined portion of the expandable tubular assembly has a lower yield point than another portion of the expandable tubular assembly.

143. The apparatus of claim 142, wherein the expansion device comprises a rotary expansion device.

144. The apparatus of claim 142, wherein the expansion device comprises an axially displaceable expansion device.

145. The apparatus of claim 142, wherein the expansion device comprises a reciprocating expansion device.

146. The apparatus of claim 142, wherein the expansion device comprises a hydroforming expansion device.

147. The apparatus of claim 142, wherein the expansion device comprises an impulsive force expansion device.

148. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly has a higher ductility and a lower yield point than another portion of the expandable tubular assembly.

149. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly has a higher ductility than another portion of the expandable tubular assembly.

150. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly has a lower yield point than another portion of the expandable tubular assembly.

151. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises an end portion of the tubular assembly.

152. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises a plurality of predetermined portions of the tubular assembly.

153. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises a plurality of spaced apart predetermined portions of the tubular assembly.

154. The apparatus of claim 142, wherein the other portion of the tubular assembly comprises an end portion of the tubular assembly.

155. The apparatus of claim 142, wherein the other portion of the tubular assembly comprises a plurality of other portions of the tubular assembly.

156. The apparatus of claim 142, wherein the other portion of the tubular assembly comprises a plurality of spaced apart other portions of the tubular assembly.

157. The apparatus of claim 142, wherein the tubular assembly comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

158. The apparatus of claim 157, wherein the tubular couplings comprise the predetermined portions of the tubular assembly; and wherein the tubular members comprise the other portion of the tubular assembly.

159. The apparatus of claim 157, wherein one or more of the tubular couplings comprise the predetermined portions of the tubular assembly.

160. The apparatus of claim 157, wherein one or more of the tubular members comprise the predetermined portions of the tubular assembly.

161. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly defines one or more openings.

162. The apparatus of claim 161, wherein one or more of the openings comprise slots.

163. The apparatus of claim 161, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

164. The apparatus of claim 142, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

165. The apparatus of claim 142, wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

166. The apparatus of claim 142, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

167. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

168. The apparatus of claim 167, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi.

169. The apparatus of claim 167, wherein the anisotropy of the predetermined portion of the tubular assembly is about 1.48.

170. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

171. The apparatus of claim 170, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi.

172. The apparatus of claim 170, wherein the anisotropy of the predetermined portion of the tubular assembly is about 1.04.

173. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

174. The apparatus of claim 173, wherein the anisotropy of the predetermined portion of the tubular assembly is about 1.92.

175. The apparatus of claim 142, wherein the predetermined portion of the tubular assembly comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

176. The apparatus of claim 175, wherein the anisotropy of the predetermined portion of the tubular assembly is at least about 1.34.

177. The apparatus of claim 142, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi.

178. The apparatus of claim 142, wherein the anisotropy of the predetermined portion of the tubular assembly is at least about 1.48.

179. The apparatus of claim 142, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi.

180. The apparatus of claim 142, wherein the anisotropy of the predetermined portion of the tubular assembly is at least about 1.04.

181. The apparatus of claim 142, wherein the anisotropy of the predetermined portion of the tubular assembly is at least about 1.92.

182. The apparatus of claim 142, wherein the anisotropy of the predetermined portion of the tubular assembly is at least about 1.34.

183. The apparatus of claim 142, wherein the anisotropy of the predetermined portion of the tubular assembly ranges from about 1.04 to about 1.92.

184. The apparatus of claim 142, wherein the yield point of the predetermined portion of the tubular assembly ranges from about 47.6 ksi to about 61.7 ksi.

185. The apparatus of claim 142, wherein the expandability coefficient of the predetermined portion of the tubular assembly is greater than 0.12.

186. The apparatus of claim 142, wherein the expandability coefficient of the predetermined portion of the tubular assembly is greater than the expandability coefficient of the other portion of the tubular assembly.

187. The apparatus of claim 142, wherein the tubular assembly comprises a wellbore casing.

188. The apparatus of claim 142, wherein the tubular assembly comprises a pipeline.

189. The apparatus of claim 142, wherein the tubular assembly comprises a structural support.

190. An expandable tubular member, wherein a yield point of the expandable tubular member after a radial expansion and plastic deformation is at least about 5.8 % greater than the yield point of the expandable tubular member prior to the radial expansion and plastic deformation.

191. The tubular member of claim 190, wherein the tubular member comprises a wellbore casing.

192. The tubular member of claim 190, wherein the tubular member comprises a pipeline.

193. The tubular member of claim 190, wherein the tubular member comprises a structural support.

194. A method of determining the expandability of a selected tubular member, comprising:

determining an anisotropy value for the selected tubular member;

determining a strain hardening value for the selected tubular member; and

multiplying the anisotropy value times the strain hardening value to generate an expandability value for the selected tubular member.

195. The method of claim 194, wherein an anisotropy value greater than 0.12 indicates that the tubular member is suitable for radial expansion and plastic deformation.

196. The method of claim 194, wherein the tubular member comprises a wellbore casing.

197. The method of claim 194, wherein the tubular member comprises a pipeline.

198. The method of claim 194, wherein the tubular member comprises a structural support.

199. A method of radially expanding and plastically deforming tubular members, comprising:

selecting a tubular member;

determining an anisotropy value for the selected tubular member;

determining a strain hardening value for the selected tubular member;

multiplying the anisotropy value times the strain hardening value to generate an expandability value for the selected tubular member; and

if the anisotropy value is greater than 0.12, then radially expanding and plastically deforming the selected tubular member.

200. The method of claim 199, wherein the tubular member comprises a wellbore casing.

201. The method of claim 199, wherein the tubular member comprises a pipeline.

202. The method of claim 199, wherein the tubular member comprises a structural support.

203. The method of claim 199, wherein radially expanding and plastically deforming the selected tubular member comprises:

inserting the selected tubular member into a preexisting structure; and

then radially expanding and plastically deforming the selected tubular member.

204. The method of claim 203, wherein the preexisting structure comprises a wellbore that traverses a subterranean formation.

205. A radially expandable tubular member apparatus comprising:

a first tubular member;

a second tubular member engaged with the first tubular member forming a joint; and

a sleeve overlapping and coupling the first and second tubular members at the joint;

wherein, prior to a radial expansion and plastic deformation of the apparatus, a predetermined portion of the apparatus has a lower yield point than another portion of the apparatus.

206. The apparatus of claim 205, wherein the predetermined portion of the apparatus has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

207. The apparatus of claim 205, wherein the predetermined portion of the apparatus has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

208. The apparatus of claim 205, wherein the predetermined portion of the apparatus has

a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

209. The apparatus of claim 205, wherein the predetermined portion of the apparatus has a larger inside diameter after the radial expansion and plastic deformation than other portions of the tubular assembly.

210. The apparatus of claim 209, further comprising:

positioning another apparatus within the preexisting structure in overlapping relation to the apparatus; and

radially expanding and plastically deforming the other apparatus within the preexisting structure;

wherein, prior to the radial expansion and plastic deformation of the apparatus, a predetermined portion of the other apparatus has a lower yield point than another portion of the other apparatus.

211. The apparatus of claim 210, wherein the inside diameter of the radially expanded and plastically deformed other portion of the apparatus is equal to the inside diameter of the radially expanded and plastically deformed other portion of the other apparatus.

212. The apparatus of claim 205, wherein the predetermined portion of the apparatus comprises an end portion of the apparatus.

213. The apparatus of claim 205, wherein the predetermined portion of the apparatus comprises a plurality of predetermined portions of the apparatus.

214. The apparatus of claim 205, wherein the predetermined portion of the apparatus comprises a plurality of spaced apart predetermined portions of the apparatus.

215. The apparatus of claim 205, wherein the other portion of the apparatus comprises an end portion of the apparatus.

216. The apparatus of claim 205, wherein the other portion of the apparatus comprises a plurality of other portions of the apparatus.

217. The apparatus of claim 205, wherein the other portion of the apparatus comprises a plurality of spaced apart other portions of the apparatus.

218. The apparatus of claim 205, wherein the apparatus comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

219. The apparatus of claim 218, wherein the tubular couplings comprise the predetermined portions of the apparatus; and wherein the tubular members comprise the other portion of the apparatus.

220. The apparatus of claim 218, wherein one or more of the tubular couplings comprise the predetermined portions of the apparatus.

221. The apparatus of claim 218, wherein one or more of the tubular members comprise the predetermined portions of the apparatus.

222. The apparatus of claim 205, wherein the predetermined portion of the apparatus defines one or more openings.

223. The apparatus of claim 222, wherein one or more of the openings comprise slots.

224. The apparatus of claim 222, wherein the anisotropy for the predetermined portion of the apparatus is greater than 1.

225. The apparatus of claim 205, wherein the anisotropy for the predetermined portion of the apparatus is greater than 1.

226. The apparatus of claim 205, wherein the strain hardening exponent for the predetermined portion of the apparatus is greater than 0.12.

227. The apparatus of claim 205, wherein the anisotropy for the predetermined portion of the apparatus is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the apparatus is greater than 0.12.

228. The apparatus of claim 205, wherein the predetermined portion of the apparatus comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

229. The apparatus of claim 228, wherein the yield point of the predetermined portion of

the apparatus is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 65.9 ksi after the radial expansion and plastic deformation.

230. The apparatus of claim 228, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

231. The apparatus of claim 228, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.48.

232. The apparatus of claim 205, wherein the predetermined portion of the apparatus comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

233. The apparatus of claim 232, wherein the yield point of the predetermined portion of the apparatus is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 74.4 ksi after the radial expansion and plastic deformation.

234. The apparatus of claim 232, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

235. The apparatus of claim 232, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.04.

236. The apparatus of claim 205, wherein the predetermined portion of the apparatus comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

237. The apparatus of claim 236, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.92.

238. The apparatus of claim 205, wherein the predetermined portion of the apparatus

comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

239. The apparatus of claim 238, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.34.

240. The apparatus of claim 205, wherein the yield point of the predetermined portion of the apparatus is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 65.9 ksi after the radial expansion and plastic deformation.

241. The apparatus of claim 205, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

242. The apparatus of claim 205, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.48.

243. The apparatus of claim 205, wherein the yield point of the predetermined portion of the apparatus is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 74.4 ksi after the radial expansion and plastic deformation.

244. The apparatus of claim 205, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

245. The apparatus of claim 205, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.04.

246. The apparatus of claim 205, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.92.

247. The apparatus of claim 205, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.34.

248. The apparatus of claim 205, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

249. The apparatus of claim 205, wherein the yield point of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, ranges from about 47.6 ksi to about 61.7 ksi.

250. The apparatus of claim 205, wherein the expandability coefficient of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is greater than 0.12.

251. The apparatus of claim 205, wherein the expandability coefficient of the predetermined portion of the apparatus is greater than the expandability coefficient of the other portion of the apparatus.

252. The apparatus of claim 205, wherein the apparatus comprises a wellbore casing.

253. The apparatus of claim 205, wherein the apparatus comprises a pipeline.

254. The apparatus of claim 205, wherein the apparatus comprises a structural support.

255. A radially expandable tubular member apparatus comprising:
a first tubular member;
a second tubular member engaged with the first tubular member forming a joint;
a sleeve overlapping and coupling the first and second tubular members at the joint;
the sleeve having opposite tapered ends and a flange engaged in a recess formed in an adjacent tubular member; and
one of the tapered ends being a surface formed on the flange;
wherein, prior to a radial expansion and plastic deformation of the apparatus, a predetermined portion of the apparatus has a lower yield point than another portion of the apparatus.

256. The apparatus as defined in claim 255 wherein the recess includes a tapered wall in mating engagement with the tapered end formed on the flange.

257. The apparatus as defined in claim 255 wherein the sleeve includes a flange at each tapered end and each tapered end is formed on a respective flange.

258. The apparatus as defined in claim 257 wherein each tubular member includes a recess.

259. The apparatus as defined in claim 258 wherein each flange is engaged in a respective one of the recesses.

260. The apparatus as defined in claim 259 wherein each recess includes a tapered wall in mating engagement with the tapered end formed on a respective one of the flanges.

261. The apparatus of claim 255, wherein the predetermined portion of the apparatus has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

262. The apparatus of claim 255, wherein the predetermined portion of the apparatus has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

263. The apparatus of claim 255, wherein the predetermined portion of the apparatus has a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

264. The apparatus of claim 255, wherein the predetermined portion of the apparatus has a larger inside diameter after the radial expansion and plastic deformation than other portions of the tubular assembly.

265. The apparatus of claim 264, further comprising:

positioning another apparatus within the preexisting structure in overlapping relation to the apparatus; and

radially expanding and plastically deforming the other apparatus within the preexisting structure;

wherein, prior to the radial expansion and plastic deformation of the apparatus, a predetermined portion of the other apparatus has a lower yield point than another portion of the other apparatus.

266. The apparatus of claim 265, wherein the inside diameter of the radially expanded and plastically deformed other portion of the apparatus is equal to the inside diameter of the radially expanded and plastically deformed other portion of the other apparatus.

267. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises an end portion of the apparatus.

268. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises a plurality of predetermined portions of the apparatus.

269. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises a plurality of spaced apart predetermined portions of the apparatus.

270. The apparatus of claim 255, wherein the other portion of the apparatus comprises an end portion of the apparatus.

271. The apparatus of claim 255, wherein the other portion of the apparatus comprises a plurality of other portions of the apparatus.

272. The apparatus of claim 255, wherein the other portion of the apparatus comprises a plurality of spaced apart other portions of the apparatus.

273. The apparatus of claim 255, wherein the apparatus comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

274. The apparatus of claim 273, wherein the tubular couplings comprise the predetermined portions of the apparatus; and wherein the tubular members comprise the other portion of the apparatus.

275. The apparatus of claim 273, wherein one or more of the tubular couplings comprise the predetermined portions of the apparatus.

276. The apparatus of claim 273, wherein one or more of the tubular members comprise the predetermined portions of the apparatus.

277. The apparatus of claim 255, wherein the predetermined portion of the apparatus

defines one or more openings.

278. The apparatus of claim 277, wherein one or more of the openings comprise slots.

279. The apparatus of claim 277, wherein the anisotropy for the predetermined portion of the apparatus is greater than 1.

280. The apparatus of claim 255, wherein the anisotropy for the predetermined portion of the apparatus is greater than 1.

281. The apparatus of claim 255, wherein the strain hardening exponent for the predetermined portion of the apparatus is greater than 0.12.

282. The apparatus of claim 255, wherein the anisotropy for the predetermined portion of the apparatus is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the apparatus is greater than 0.12.

283. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

284. The apparatus of claim 283, wherein the yield point of the predetermined portion of the apparatus is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 65.9 ksi after the radial expansion and plastic deformation.

285. The apparatus of claim 283, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

286. The apparatus of claim 283, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.48.

287. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

288. The apparatus of claim 287, wherein the yield point of the predetermined portion of the apparatus is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 74.4 ksi after the radial expansion and plastic deformation.

289. The apparatus of claim 287, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

290. The apparatus of claim 287, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.04.

291. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

292. The apparatus of claim 291, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.92.

293. The apparatus of claim 255, wherein the predetermined portion of the apparatus comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

294. The apparatus of claim 293, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is about 1.34.

295. The apparatus of claim 255, wherein the yield point of the predetermined portion of the apparatus is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 65.9 ksi after the radial expansion and plastic deformation.

296. The apparatus of claim 255, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

297. The apparatus of claim 255, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.48.

298. The apparatus of claim 255, wherein the yield point of the predetermined portion of the apparatus is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the apparatus is at least about 74.4 ksi after the radial expansion and plastic deformation.

299. The apparatus of claim 255, wherein the yield point of the predetermined portion of the apparatus after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the apparatus prior to the radial expansion and plastic deformation.

300. The apparatus of claim 255, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.04.

301. The apparatus of claim 255, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.92.

302. The apparatus of claim 255, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is at least about 1.34.

303. The apparatus of claim 255, wherein the anisotropy of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

304. The apparatus of claim 255, wherein the yield point of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, ranges from about 47.6 ksi to about 61.7 ksi.

305. The apparatus of claim 255, wherein the expandability coefficient of the predetermined portion of the apparatus, prior to the radial expansion and plastic deformation, is greater than 0.12.

306. The apparatus of claim 255, wherein the expandability coefficient of the predetermined portion of the apparatus is greater than the expandability coefficient of the

other portion of the apparatus.

307. The apparatus of claim 255, wherein the apparatus comprises a wellbore casing.

308. The apparatus of claim 255, wherein the apparatus comprises a pipeline.

309. The apparatus of claim 255, wherein the apparatus comprises a structural support.

310. A method of joining radially expandable tubular members comprising:
providing a first tubular member;
engaging a second tubular member with the first tubular member to form a joint;
providing a sleeve;
mounting the sleeve for overlapping and coupling the first and second tubular members at the joint;
wherein the first tubular member, the second tubular member, and the sleeve define a tubular assembly; and
radially expanding and plastically deforming the tubular assembly;
wherein, prior to the radial expansion and plastic deformation, a predetermined portion of the tubular assembly has a lower yield point than another portion of the tubular assembly.

311. The method of claim 310, wherein the predetermined portion of the tubular assembly has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

312. The method of claim 310, wherein the predetermined portion of the tubular assembly has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

313. The method of claim 310, wherein the predetermined portion of the tubular assembly has a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

314. The method of claim 310, wherein the predetermined portion of the tubular assembly has a larger inside diameter after the radial expansion and plastic deformation than the other portion of the tubular assembly.

315. The method of claim 314, further comprising:

positioning another tubular assembly within the preexisting structure in overlapping relation to the tubular assembly; and

radially expanding and plastically deforming the other tubular assembly within the preexisting structure;

wherein, prior to the radial expansion and plastic deformation of the tubular assembly, a predetermined portion of the other tubular assembly has a lower yield point than another portion of the other tubular assembly.

316. The method of claim 315, wherein the inside diameter of the radially expanded and plastically deformed other portion of the tubular assembly is equal to the inside diameter of the radially expanded and plastically deformed other portion of the other tubular assembly.

317. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises an end portion of the tubular assembly.

318. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises a plurality of predetermined portions of the tubular assembly.

319. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises a plurality of spaced apart predetermined portions of the tubular assembly.

320. The method of claim 310, wherein the other portion of the tubular assembly comprises an end portion of the tubular assembly.

321. The method of claim 310, wherein the other portion of the tubular assembly comprises a plurality of other portions of the tubular assembly.

322. The method of claim 310, wherein the other portion of the tubular assembly comprises a plurality of spaced apart other portions of the tubular assembly.

323. The method of claim 310, wherein the tubular assembly comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

324. The method of claim 323, wherein the tubular couplings comprise the predetermined portions of the tubular assembly; and wherein the tubular members comprise the other portion of the tubular assembly.

325. The method of claim 323, wherein one or more of the tubular couplings comprise the predetermined portions of the tubular assembly.

326. The method of claim 323, wherein one or more of the tubular members comprise the predetermined portions of the tubular assembly.

327. The method of claim 310, wherein the predetermined portion of the tubular assembly defines one or more openings.

328. The method of claim 327, wherein one or more of the openings comprise slots.

329. The method of claim 327, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

330. The method of claim 310, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

331. The method of claim 310, wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

332. The method of claim 310, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

333. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

334. The method of claim 333, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

335. The method of claim 333, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the

radial expansion and plastic deformation.

336. The method of claim 333, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.48.

337. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

338. The method of claim 337, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

339. The method of claim 337, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

340. The method of claim 337, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.04.

341. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

342. The method of claim 341, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.92.

343. The method of claim 310, wherein the predetermined portion of the tubular assembly comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

344. The method of claim 343, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.34.

345. The method of claim 310, wherein the yield point of the predetermined portion of the

tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

346. The method of claim 310, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

347. The method of claim 310, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.48.

348. The method of claim 310, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

349. The method of claim 310, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

350. The method of claim 310, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.04.

351. The method of claim 310, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.92.

352. The method of claim 310, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.34.

353. The method of claim 310, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about

1.04 to about 1.92.

354. The method of claim 310, wherein the yield point of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about 47.6 ksi to about 61.7 ksi.

355. The method of claim 310, wherein the expandability coefficient of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is greater than 0.12.

356. The method of claim 310, wherein the expandability coefficient of the predetermined portion of the tubular assembly is greater than the expandability coefficient of the other portion of the tubular assembly.

357. The method of claim 310, wherein the tubular assembly comprises a wellbore casing.

358. The method of claim 310, wherein the tubular assembly comprises a pipeline.

359. The method of claim 310, wherein the tubular assembly comprises a structural support.

360. A method of joining radially expandable tubular members comprising:
providing a first tubular member;
engaging a second tubular member with the first tubular member to form a joint;
providing a sleeve having opposite tapered ends and a flange, one of the tapered ends being a surface formed on the flange;
mounting the sleeve for overlapping and coupling the first and second tubular members at the joint, wherein the flange is engaged in a recess formed in an adjacent one of the tubular members;
wherein the first tubular member, the second tubular member, and the sleeve define a tubular assembly; and
radially expanding and plastically deforming the tubular assembly;
wherein, prior to the radial expansion and plastic deformation, a predetermined portion of the tubular assembly has a lower yield point than another portion of the tubular assembly.

361. The method as defined in claim 360 further comprising:

providing a tapered wall in the recess for mating engagement with the tapered end formed on the flange.

362. The method as defined in claim 360 further comprising:
providing a flange at each tapered end wherein each tapered end is formed on a respective flange.

363. The method as defined in claim 362 further comprising:
providing a recess in each tubular member.

364. The method as defined in claim 363 further comprising:
engaging each flange in a respective one of the recesses.

365. The method as defined in claim 364 further comprising:
providing a tapered wall in each recess for mating engagement with the tapered end formed on a respective one of the flanges.

366. The method of claim 360, wherein the predetermined portion of the tubular assembly has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

367. The method of claim 360, wherein the predetermined portion of the tubular assembly has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

368. The method of claim 360, wherein the predetermined portion of the tubular assembly has a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

369. The method of claim 360, wherein the predetermined portion of the tubular assembly has a larger inside diameter after the radial expansion and plastic deformation than the other portion of the tubular assembly.

370. The method of claim 369, further comprising:
positioning another tubular assembly within the preexisting structure in overlapping relation to the tubular assembly; and
radially expanding and plastically deforming the other tubular assembly within the

preexisting structure;

wherein, prior to the radial expansion and plastic deformation of the tubular assembly, a predetermined portion of the other tubular assembly has a lower yield point than another portion of the other tubular assembly.

371. The method of claim 370, wherein the inside diameter of the radially expanded and plastically deformed other portion of the tubular assembly is equal to the inside diameter of the radially expanded and plastically deformed other portion of the other tubular assembly.

372. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises an end portion of the tubular assembly.

373. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises a plurality of predetermined portions of the tubular assembly.

374. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises a plurality of spaced apart predetermined portions of the tubular assembly.

375. The method of claim 360, wherein the other portion of the tubular assembly comprises an end portion of the tubular assembly.

376. The method of claim 360, wherein the other portion of the tubular assembly comprises a plurality of other portions of the tubular assembly.

377. The method of claim 360, wherein the other portion of the tubular assembly comprises a plurality of spaced apart other portions of the tubular assembly.

378. The method of claim 360, wherein the tubular assembly comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

379. The method of claim 378, wherein the tubular couplings comprise the predetermined portions of the tubular assembly; and wherein the tubular members comprise the other portion of the tubular assembly.

380. The method of claim 378, wherein one or more of the tubular couplings comprise the predetermined portions of the tubular assembly.

381. The method of claim 378, wherein one or more of the tubular members comprise the predetermined portions of the tubular assembly.

382. The method of claim 360, wherein the predetermined portion of the tubular assembly defines one or more openings.

383. The method of claim 382, wherein one or more of the openings comprise slots.

384. The method of claim 382, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

385. The method of claim 360, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

386. The method of claim 360, wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

387. The method of claim 360, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

388. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

389. The method of claim 388, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

390. The method of claim 388, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

391. The method of claim 388, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.48.

392. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

393. The method of claim 392, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

394. The method of claim 392, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

395. The method of claim 392, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.04.

396. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

397. The method of claim 396, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.92.

398. The method of claim 360, wherein the predetermined portion of the tubular assembly comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

399. The method of claim 398, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.34.

400. The method of claim 360, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

401. The method of claim 360, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

402. The method of claim 360, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.48.

403. The method of claim 360, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

404. The method of claim 360, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

405. The method of claim 360, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.04.

406. The method of claim 360, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.92.

407. The method of claim 360, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.34.

408. The method of claim 360, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

409. The method of claim 360, wherein the yield point of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about

47.6 ksi to about 61.7 ksi.

491. The method of claim 360, wherein the expandability coefficient of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is greater than 0.12.

492. The method of claim 360, wherein the expandability coefficient of the predetermined portion of the tubular assembly is greater than the expandability coefficient of the other portion of the tubular assembly.

493. The method of claim 360, wherein the tubular assembly comprises a wellbore casing.

494. The method of claim 360, wherein the tubular assembly comprises a pipeline.

495. The method of claim 360, wherein the tubular assembly comprises a structural support.

496. The apparatus of claim 205, wherein at least a portion of the sleeve is comprised of a frangible material.

497. The apparatus of claim 205, wherein the wall thickness of the sleeve is variable.

498. The method of claim 310, wherein at least a portion of the sleeve is comprised of a frangible material.

499. The method of claim 310, wherein the sleeve comprises a variable wall thickness.

500. The apparatus of claim 205, further comprising:
means for increasing the axial compression loading capacity of the joint between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members.

501. The apparatus of claim 205, further comprising:
means for increasing the axial tension loading capacity of the joint between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members.

502. The apparatus of claim 205, further comprising:
means for increasing the axial compression and tension loading capacity of the joint between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members.

503. The apparatus of claim 205, further comprising:
means for avoiding stress risers in the joint between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members.

504. The apparatus of claim 205, further comprising:
means for inducing stresses at selected portions of the coupling between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members.

505. The apparatus of claim 205, wherein the sleeve is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

506. The method of claim 310, further comprising:
maintaining the sleeve in circumferential tension; and
maintaining the first and second tubular members in circumferential compression.

507. The apparatus of claim 205, wherein the sleeve is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

508. The apparatus of claim 205, wherein the sleeve is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

509. The method of claim 310, further comprising:
maintaining the sleeve in circumferential tension; and
maintaining the first and second tubular members in circumferential compression.

510. The method of claim 310, further comprising:
maintaining the sleeve in circumferential tension; and
maintaining the first and second tubular members in circumferential compression.

511. The apparatus of claim 500, wherein the means for increasing the axial compression loading capacity of the coupling between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

512. The apparatus of claim 501, wherein the means for increasing the axial tension loading capacity of the coupling between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

513. The apparatus of claim 502, wherein the means for increasing the axial compression and tension loading capacity of the coupling between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

514. The apparatus of claim 503, wherein the means for avoiding stress risers in the coupling between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

515. The apparatus of claim 504, wherein the means for inducing stresses at selected portions of the coupling between the first and second tubular members before and after a radial expansion and plastic deformation of the first and second tubular members is circumferentially tensioned; and wherein the first and second tubular members are circumferentially compressed.

516. An expandable tubular assembly, comprising:
a first tubular member;
a second tubular member coupled to the first tubular member;
a first threaded connection for coupling a portion of the first and second tubular members;
a second threaded connection spaced apart from the first threaded connection for coupling another portion of the first and second tubular members;

a tubular sleeve coupled to and receiving end portions of the first and second tubular members; and

a sealing element positioned between the first and second spaced apart threaded connections for sealing an interface between the first and second tubular member;

wherein the sealing element is positioned within an annulus defined between the first and second tubular members; and

wherein, prior to a radial expansion and plastic deformation of the assembly, a predetermined portion of the assembly has a lower yield point than another portion of the apparatus.

517. The assembly of claim 516, wherein the predetermined portion of the assembly has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

518. The assembly of claim 516, wherein the predetermined portion of the assembly has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

519. The assembly of claim 516, wherein the predetermined portion of the assembly has a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

520. The assembly of claim 516, wherein the predetermined portion of the assembly has a larger inside diameter after the radial expansion and plastic deformation than other portions of the tubular assembly.

521. The assembly of claim 520, further comprising:

positioning another assembly within the preexisting structure in overlapping relation to the assembly; and

radially expanding and plastically deforming the other assembly within the preexisting structure;

wherein, prior to the radial expansion and plastic deformation of the assembly, a predetermined portion of the other assembly has a lower yield point than another portion of the other assembly.

522. The assembly of claim 521, wherein the inside diameter of the radially expanded and

plastically deformed other portion of the assembly is equal to the inside diameter of the radially expanded and plastically deformed other portion of the other assembly.

523. The assembly of claim 516, wherein the predetermined portion of the assembly comprises an end portion of the assembly.

524. The assembly of claim 516, wherein the predetermined portion of the assembly comprises a plurality of predetermined portions of the assembly.

525. The assembly of claim 516, wherein the predetermined portion of the assembly comprises a plurality of spaced apart predetermined portions of the assembly.

526. The assembly of claim 516, wherein the other portion of the assembly comprises an end portion of the assembly.

527. The assembly of claim 516, wherein the other portion of the assembly comprises a plurality of other portions of the assembly.

528. The assembly of claim 516, wherein the other portion of the assembly comprises a plurality of spaced apart other portions of the assembly.

529. The assembly of claim 516, wherein the assembly comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

530. The assembly of claim 529, wherein the tubular couplings comprise the predetermined portions of the assembly; and wherein the tubular members comprise the other portion of the assembly.

531. The assembly of claim 529, wherein one or more of the tubular couplings comprise the predetermined portions of the assembly.

532. The assembly of claim 529, wherein one or more of the tubular members comprise the predetermined portions of the assembly.

533. The assembly of claim 516, wherein the predetermined portion of the assembly defines one or more openings.

534. The assembly of claim 533, wherein one or more of the openings comprise slots.

535. The assembly of claim 533, wherein the anisotropy for the predetermined portion of the assembly is greater than 1.

536. The assembly of claim 516, wherein the anisotropy for the predetermined portion of the assembly is greater than 1.

537. The assembly of claim 516, wherein the strain hardening exponent for the predetermined portion of the assembly is greater than 0.12.

538. The assembly of claim 516, wherein the anisotropy for the predetermined portion of the assembly is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the assembly is greater than 0.12.

539. The assembly of claim 516, wherein the predetermined portion of the assembly comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

540. The assembly of claim 539, wherein the yield point of the predetermined portion of the assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

541. The assembly of claim 539, wherein the yield point of the predetermined portion of the assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the assembly prior to the radial expansion and plastic deformation.

542. The assembly of claim 539, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is about 1.48.

543. The assembly of claim 516, wherein the predetermined portion of the assembly comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

544. The assembly of claim 543, wherein the yield point of the predetermined portion of

the assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

545. The assembly of claim 543, wherein the yield point of the predetermined portion of the assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the assembly prior to the radial expansion and plastic deformation.

546. The assembly of claim 543, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is about 1.04.

547. The assembly of claim 516, wherein the predetermined portion of the assembly comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

548. The assembly of claim 547, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is about 1.92.

549. The assembly of claim 516, wherein the predetermined portion of the assembly comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

550. The assembly of claim 549, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is about 1.34.

551. The assembly of claim 516, wherein the yield point of the predetermined portion of the assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

552. The assembly of claim 516, wherein the yield point of the predetermined portion of the assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the assembly prior to the radial expansion and plastic deformation.

553. The assembly of claim 516, wherein the anisotropy of the predetermined portion of

the assembly, prior to the radial expansion and plastic deformation, is at least about 1.48.

554. The assembly of claim 516, wherein the yield point of the predetermined portion of the assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

555. The assembly of claim 516, wherein the yield point of the predetermined portion of the assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the assembly prior to the radial expansion and plastic deformation.

556. The assembly of claim 516, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is at least about 1.04.

557. The assembly of claim 516, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is at least about 1.92.

558. The assembly of claim 516, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is at least about 1.34.

559. The assembly of claim 516, wherein the anisotropy of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

560. The assembly of claim 516, wherein the yield point of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, ranges from about 47.6 ksi to about 61.7 ksi.

561. The assembly of claim 516, wherein the expandability coefficient of the predetermined portion of the assembly, prior to the radial expansion and plastic deformation, is greater than 0.12.

562. The assembly of claim 516, wherein the expandability coefficient of the predetermined portion of the assembly is greater than the expandability coefficient of the other portion of the assembly.

563. The assembly of claim 516, wherein the assembly comprises a wellbore casing.

564. The assembly of claim 516, wherein the assembly comprises a pipeline.

565. The assembly of claim 516, wherein the assembly comprises a structural support.

566. The assembly of claim 516, wherein the annulus is at least partially defined by an irregular surface.

567. The assembly of claim 516, wherein the annulus is at least partially defined by a toothed surface.

568. The assembly of claim 516, wherein the sealing element comprises an elastomeric material.

569. The assembly of claim 516, wherein the sealing element comprises a metallic material.

570. The assembly of claim 516, wherein the sealing element comprises an elastomeric and a metallic material.

571. A method of joining radially expandable tubular members comprising:
providing a first tubular member;
providing a second tubular member;
providing a sleeve;
mounting the sleeve for overlapping and coupling the first and second tubular members;
threadably coupling the first and second tubular members at a first location;
threadably coupling the first and second tubular members at a second location spaced apart from the first location;
sealing an interface between the first and second tubular members between the first and second locations using a compressible sealing element, wherein the first tubular member, second tubular member, sleeve, and the sealing element define a tubular assembly; and
radially expanding and plastically deforming the tubular assembly;
wherein, prior to the radial expansion and plastic deformation, a predetermined portion of the tubular assembly has a lower yield point than another portion of

the tubular assembly.

572. The method as defined in claim 571 wherein the sealing element includes an irregular surface.

573. The method as defined in claim 571, wherein the sealing element includes a toothed surface.

574. The method as defined in claim 571, wherein the sealing element comprises an elastomeric material.

575. The method as defined in claim 571, wherein the sealing element comprises a metallic material.

576. The method as defined in claim 571, wherein the sealing element comprises an elastomeric and a metallic material.

577. The method of claim 571, wherein the predetermined portion of the tubular assembly has a higher ductility and a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

578. The method of claim 571, wherein the predetermined portion of the tubular assembly has a higher ductility prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

579. The method of claim 571, wherein the predetermined portion of the tubular assembly has a lower yield point prior to the radial expansion and plastic deformation than after the radial expansion and plastic deformation.

580. The method of claim 571, wherein the predetermined portion of the tubular assembly has a larger inside diameter after the radial expansion and plastic deformation than the other portion of the tubular assembly.

581. The method of claim 571, further comprising:
positioning another tubular assembly within the preexisting structure in overlapping relation to the tubular assembly; and
radially expanding and plastically deforming the other tubular assembly within the

preexisting structure;

wherein, prior to the radial expansion and plastic deformation of the tubular assembly, a predetermined portion of the other tubular assembly has a lower yield point than another portion of the other tubular assembly.

582. The method of claim 581, wherein the inside diameter of the radially expanded and plastically deformed other portion of the tubular assembly is equal to the inside diameter of the radially expanded and plastically deformed other portion of the other tubular assembly.

583. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises an end portion of the tubular assembly.

584. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises a plurality of predetermined portions of the tubular assembly.

585. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises a plurality of spaced apart predetermined portions of the tubular assembly.

586. The method of claim 571, wherein the other portion of the tubular assembly comprises an end portion of the tubular assembly.

587. The method of claim 571, wherein the other portion of the tubular assembly comprises a plurality of other portions of the tubular assembly.

588. The method of claim 571, wherein the other portion of the tubular assembly comprises a plurality of spaced apart other portions of the tubular assembly.

589. The method of claim 571, wherein the tubular assembly comprises a plurality of tubular members coupled to one another by corresponding tubular couplings.

590. The method of claim 589, wherein the tubular couplings comprise the predetermined portions of the tubular assembly; and wherein the tubular members comprise the other portion of the tubular assembly.

591. The method of claim 589, wherein one or more of the tubular couplings comprise the predetermined portions of the tubular assembly.

592. The method of claim 589, wherein one or more of the tubular members comprise the predetermined portions of the tubular assembly.

593. The method of claim 571, wherein the predetermined portion of the tubular assembly defines one or more openings.

594. The method of claim 593, wherein one or more of the openings comprise slots.

595. The method of claim 593, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

596. The method of claim 571, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1.

597. The method of claim 571, wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

598. The method of claim 571, wherein the anisotropy for the predetermined portion of the tubular assembly is greater than 1; and wherein the strain hardening exponent for the predetermined portion of the tubular assembly is greater than 0.12.

599. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises a first steel alloy comprising: 0.065 % C, 1.44 % Mn, 0.01 % P, 0.002 % S, 0.24 % Si, 0.01 % Cu, 0.01 % Ni, and 0.02 % Cr.

600. The method of claim 599, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

601. The method of claim 599, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

602. The method of claim 599, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.48.

603. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises a second steel alloy comprising: 0.18 % C, 1.28 % Mn, 0.017 % P, 0.004 % S, 0.29 % Si, 0.01 % Cu, 0.01 % Ni, and 0.03 % Cr.

604. The method of claim 603, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

605. The method of claim 603, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

606. The method of claim 603, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.04.

607. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises a third steel alloy comprising: 0.08 % C, 0.82 % Mn, 0.006 % P, 0.003 % S, 0.30 % Si, 0.16 % Cu, 0.05 % Ni, and 0.05 % Cr.

608. The method of claim 607, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.92.

609. The method of claim 571, wherein the predetermined portion of the tubular assembly comprises a fourth steel alloy comprising: 0.02 % C, 1.31 % Mn, 0.02 % P, 0.001 % S, 0.45 % Si, 9.1 % Ni, and 18.7 % Cr.

610. The method of claim 609, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is about 1.34.

611. The method of claim 571, wherein the yield point of the predetermined portion of the tubular assembly is at most about 46.9 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 65.9 ksi after the radial expansion and plastic deformation.

612. The method of claim 571, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 40 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

613. The method of claim 571, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.48.

614. The method of claim 571, wherein the yield point of the predetermined portion of the tubular assembly is at most about 57.8 ksi prior to the radial expansion and plastic deformation; and wherein the yield point of the predetermined portion of the tubular assembly is at least about 74.4 ksi after the radial expansion and plastic deformation.

615. The method of claim 571, wherein the yield point of the predetermined portion of the tubular assembly after the radial expansion and plastic deformation is at least about 28 % greater than the yield point of the predetermined portion of the tubular assembly prior to the radial expansion and plastic deformation.

616. The method of claim 571, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.04.

617. The method of claim 571, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.92.

618. The method of claim 571, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is at least about 1.34.

619. The method of claim 571, wherein the anisotropy of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about 1.04 to about 1.92.

620. The method of claim 571, wherein the yield point of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, ranges from about

47.6 ksi to about 61.7 ksi.

621. The method of claim 571, wherein the expandability coefficient of the predetermined portion of the tubular assembly, prior to the radial expansion and plastic deformation, is greater than 0.12.

622. The method of claim 571, wherein the expandability coefficient of the predetermined portion of the tubular assembly is greater than the expandability coefficient of the other portion of the tubular assembly.

623. The method of claim 571, wherein the tubular assembly comprises a wellbore casing.

624. The method of claim 571, wherein the tubular assembly comprises a pipeline.

625. The method of claim 571, wherein the tubular assembly comprises a structural support.

626. The apparatus of claim 205, wherein the sleeve comprises:
a plurality of spaced apart tubular sleeves coupled to and receiving end portions of the first and second tubular members.

627. The apparatus of claim 626, wherein the first tubular member comprises a first threaded connection; wherein the second tubular member comprises a second threaded connection; wherein the first and second threaded connections are coupled to one another; wherein at least one of the tubular sleeves is positioned in opposing relation to the first threaded connection; and wherein at least one of the tubular sleeves is positioned in opposing relation to the second threaded connection.

628. The apparatus of claim 626, wherein the first tubular member comprises a first threaded connection; wherein the second tubular member comprises a second threaded connection; wherein the first and second threaded connections are coupled to one another; and wherein at least one of the tubular sleeves is not positioned in opposing relation to the first and second threaded connections.

629. The method of claim 310, further comprising:
threadably coupling the first and second tubular members at a first location;

threadably coupling the first and second tubular members at a second location spaced apart from the first location;

providing a plurality of sleeves; and

mounting the sleeves at spaced apart locations for overlapping and coupling the first and second tubular members.

630. The method of claim 629, wherein at least one of the tubular sleeves is positioned in opposing relation to the first threaded coupling; and wherein at least one of the tubular sleeves is positioned in opposing relation to the second threaded coupling.

631. The method of claim 629, wherein at least one of the tubular sleeves is not positioned in opposing relation to the first and second threaded couplings.

632. The apparatus of claim 205, further comprising:

a threaded connection for coupling a portion of the first and second tubular members;

wherein at least a portion of the threaded connection is upset.

633. The apparatus of claim 632, wherein at least a portion of tubular sleeve penetrates the first tubular member.

634. The method of claim 310, further comprising:

threadably coupling the first and second tubular members; and

upsetting the threaded coupling.

635. The apparatus of claim 205, wherein the first tubular member further comprises an annular extension extending therefrom; and wherein the flange of the sleeve defines an annular recess for receiving and mating with the annular extension of the first tubular member.

636. The method of claim 310, wherein the first tubular member further comprises an annular extension extending therefrom; and wherein the flange of the sleeve defines an annular recess for receiving and mating with the annular extension of the first tubular member.

637. The apparatus of claim 205, further comprising:

one or more stress concentrators for concentrating stresses in the joint.

638. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more external grooves defined in the first tubular member.

639. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more internal grooves defined in the second tubular member.

640. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more openings defined in the sleeve.

641. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more external grooves defined in the first tubular member; and wherein one or more of the stress concentrators comprises one or more internal grooves defined in the second tubular member.

642. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more external grooves defined in the first tubular member; and wherein one or more of the stress concentrators comprises one or more openings defined in the sleeve.

643. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more internal grooves defined in the second tubular member; and wherein one or more of the stress concentrators comprises one or more openings defined in the sleeve.

644. The apparatus as defined in claim 637, wherein one or more of the stress concentrators comprises one or more external grooves defined in the first tubular member; wherein one or more of the stress concentrators comprises one or more internal grooves defined in the second tubular member; and wherein one or more of the stress concentrators comprises one or more openings defined in the sleeve.

645. The method of claim 310, further comprising:
concentrating stresses within the joint.

646. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the first tubular member to concentrate stresses within the joint.

647. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the second tubular member to concentrate stresses within the joint.

648. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the sleeve to concentrate stresses within the joint.

649. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the first tubular member and the second tubular member to concentrate stresses within the joint.

650. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the first tubular member and the sleeve to concentrate stresses within the joint.

651. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the second tubular member and the sleeve to concentrate stresses within the joint.

652. The method as defined in claim 645, wherein concentrating stresses within the joint comprises using the first tubular member, the second tubular member, and the sleeve to concentrate stresses within the joint.

653. The apparatus of claim 205, further comprising:
means for maintaining portions of the first and second tubular member in circumferential compression following the radial expansion and plastic deformation of the first and second tubular members.

654. The apparatus of claim 205, further comprising:
means for concentrating stresses within the mechanical connection during the radial expansion and plastic deformation of the first and second tubular members.

655. The apparatus of claim 205, further comprising:
means for maintaining portions of the first and second tubular member in circumferential compression following the radial expansion and plastic deformation of the first and second tubular members; and

means for concentrating stresses within the mechanical connection during the radial expansion and plastic deformation of the first and second tubular members.

656. The method of claim 310, further comprising:
maintaining portions of the first and second tubular member in circumferential compression following a radial expansion and plastic deformation of the first and second tubular members.

657. The method of claim 310, further comprising:
concentrating stresses within the joint during a radial expansion and plastic deformation of the first and second tubular members.

658. The method of claim 310, further comprising:
maintaining portions of the first and second tubular member in circumferential compression following a radial expansion and plastic deformation of the first and second tubular members; and
concentrating stresses within the joint during a radial expansion and plastic deformation of the first and second tubular members.

659. The method of claim 1, wherein the carbon content of the predetermined portion of the tubular assembly is less than or equal to 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the tubular assembly is less than 0.21.

660. The method of claim 1, wherein the carbon content of the predetermined portion of the tubular assembly is greater than 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the tubular assembly is less than 0.36.

661. An expandable tubular member, wherein the carbon content of the tubular member is less than or equal to 0.12 percent; and wherein the carbon equivalent value for the tubular member is less than 0.21.

662. The tubular member of claim 661, wherein the tubular member comprises a wellbore casing.

663. An expandable tubular member, wherein the carbon content of the tubular member is greater than 0.12 percent; and wherein the carbon equivalent value for the tubular member is less than 0.36.

664. The tubular member of claim 663, wherein the tubular member comprises a wellbore casing.

665. The apparatus of claim 142, wherein the carbon content of the predetermined portion of the tubular assembly is less than or equal to 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the tubular assembly is less than 0.21.

666. The apparatus of claim 142, wherein the carbon content of the predetermined portion of the tubular assembly is greater than 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the tubular assembly is less than 0.36.

667. A method of selecting tubular members for radial expansion and plastic deformation, comprising:
selecting a tubular member from a collection of tubular member;
determining a carbon content of the selected tubular member;
determining a carbon equivalent value for the selected tubular member; and
if the carbon content of the selected tubular member is less than or equal to 0.12 percent and the carbon equivalent value for the selected tubular member is less than 0.21, then determining that the selected tubular member is suitable for radial expansion and plastic deformation.

668. A method of selecting tubular members for radial expansion and plastic deformation, comprising:
selecting a tubular member from a collection of tubular member;
determining a carbon content of the selected tubular member;
determining a carbon equivalent value for the selected tubular member; and
if the carbon content of the selected tubular member is greater than 0.12 percent and the carbon equivalent value for the selected tubular member is less than 0.36, then determining that the selected tubular member is suitable for radial expansion and plastic deformation.

669. The apparatus of claim 205, wherein the carbon content of the predetermined portion of the apparatus is less than or equal to 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the apparatus is less than 0.21.

670. The apparatus of claim 205, wherein the carbon content of the predetermined portion of the apparatus is greater than 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the apparatus is less than 0.36.

671. The method of claim 310, wherein the carbon content of the predetermined portion of the tubular assembly is less than or equal to 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the tubular assembly is less than 0.21.

672. The method of claim 310, wherein the carbon content of the predetermined portion of the tubular assembly is greater than 0.12 percent; and wherein the carbon equivalent value for the predetermined portion of the tubular assembly is less than 0.36.

673. An expandable tubular member, comprising:

a tubular body;

wherein a yield point of an inner tubular portion of the tubular body is less than a yield point of an outer tubular portion of the tubular body.

674. The expandable tubular member of claim 673, wherein the yield point of the inner tubular portion of the tubular body varies as a function of the radial position within the tubular body.

675. The expandable tubular member of claim 674, wherein the yield point of the inner tubular portion of the tubular body varies in an linear fashion as a function of the radial position within the tubular body.

676. The expandable tubular member of claim 674, wherein the yield point of the inner tubular portion of the tubular body varies in an non-linear fashion as a function of the radial position within the tubular body.

677. The expandable tubular member of claim 673, wherein the yield point of the outer tubular portion of the tubular body varies as a function of the radial position within the tubular body.

678. The expandable tubular member of claim 677, wherein the yield point of the outer tubular portion of the tubular body varies in an linear fashion as a function of the radial position within the tubular body.

679. The expandable tubular member of claim 677, wherein the yield point of the outer tubular portion of the tubular body varies in an non-linear fashion as a function of the radial position within the tubular body.

680. The expandable tubular member of claim 673,

wherein the yield point of the inner tubular portion of the tubular body varies as a function of the radial position within the tubular body; and

wherein the yield point of the outer tubular portion of the tubular body varies as a function of the radial position within the tubular body.

681. The expandable tubular member of claim 680, wherein the yield point of the inner tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body.

682. The expandable tubular member of claim 680, wherein the yield point of the inner tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body.

683. The expandable tubular member of claim 680, wherein the yield point of the inner tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body.

684. The expandable tubular member of claim 680, wherein the yield point of the inner tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body.

685. The expandable tubular member of claim 680, wherein the rate of change of the yield point of the inner tubular portion of the tubular body is different than the rate of change of the yield point of the outer tubular portion of the tubular body.

686. The expandable tubular member of claim 680, wherein the rate of change of the yield point of the inner tubular portion of the tubular body is different than the rate of change of the yield point of the outer tubular portion of the tubular body.

687. The method of claim 1, wherein a yield point of an inner tubular portion of at least a portion of the tubular assembly is less than a yield point of an outer tubular portion of the portion of the tubular assembly.

688. The method of claim 687, wherein the yield point of the inner tubular portion of the tubular body varies as a function of the radial position within the tubular body.

689. The method of claim 688, wherein the yield point of the inner tubular portion of the tubular body varies in an linear fashion as a function of the radial position within the tubular body.

690. The method of claim 688, wherein the yield point of the inner tubular portion of the tubular body varies in an non-linear fashion as a function of the radial position within the tubular body.

691. The method of claim 687, wherein the yield point of the outer tubular portion of the tubular body varies as a function of the radial position within the tubular body.

692. The method of claim 691, wherein the yield point of the outer tubular portion of the tubular body varies in an linear fashion as a function of the radial position within the tubular body.

693. The method of claim 691, wherein the yield point of the outer tubular portion of the tubular body varies in an non-linear fashion as a function of the radial position within the tubular body.

694. The method of claim 687, wherein the yield point of the inner tubular portion of the tubular body varies as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies as a function of the radial position within the tubular body.

695. The method of claim 694, wherein the yield point of the inner tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body.

696. The method of claim 694, wherein the yield point of the inner tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body.

697. The method of claim 694, wherein the yield point of the inner tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body.

698. The method of claim 694, wherein the yield point of the inner tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body.

699. The method of claim 694, wherein the rate of change of the yield point of the inner tubular portion of the tubular body is different than the rate of change of the yield point of the outer tubular portion of the tubular body.

700. The method of claim 694, wherein the rate of change of the yield point of the inner tubular portion of the tubular body is different than the rate of change of the yield point of the outer tubular portion of the tubular body.

701. The apparatus of claim 142, wherein a yield point of an inner tubular portion of at least a portion of the tubular assembly is less than a yield point of an outer tubular portion of the portion of the tubular assembly.

702. The apparatus of claim 701, wherein the yield point of the inner tubular portion of the tubular body varies as a function of the radial position within the tubular body.

703. The apparatus of claim 702, wherein the yield point of the inner tubular portion of the tubular body varies in an linear fashion as a function of the radial position within the tubular body.

704. The apparatus of claim 702, wherein the yield point of the inner tubular portion of the tubular body varies in an non-linear fashion as a function of the radial position within the tubular body.

705. The apparatus of claim 701, wherein the yield point of the outer tubular portion of the tubular body varies as a function of the radial position within the tubular body.

706. The apparatus of claim 705, wherein the yield point of the outer tubular portion of the tubular body varies in an linear fashion as a function of the radial position within the tubular body.

707. The apparatus of claim 705, wherein the yield point of the outer tubular portion of the tubular body varies in an non-linear fashion as a function of the radial position within the tubular body.

708. The apparatus of claim 701, wherein the yield point of the inner tubular portion of the tubular body varies as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies as a function of the radial position within the tubular body.

709. The apparatus of claim 708, wherein the yield point of the inner tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body.

710. The apparatus of claim 708, wherein the yield point of the inner tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body.

711. The apparatus of claim 708, wherein the yield point of the inner tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the

tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a linear fashion as a function of the radial position within the tubular body.

712. The apparatus of claim 708, wherein the yield point of the inner tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body; and wherein the yield point of the outer tubular portion of the tubular body varies in a non-linear fashion as a function of the radial position within the tubular body.

713. The apparatus of claim 708, wherein the rate of change of the yield point of the inner tubular portion of the tubular body is different than the rate of change of the yield point of the outer tubular portion of the tubular body.

714. The apparatus of claim 708, wherein the rate of change of the yield point of the inner tubular portion of the tubular body is different than the rate of change of the yield point of the outer tubular portion of the tubular body.

715. The method of claim 1, wherein prior to the radial expansion and plastic deformation, at least a portion of the tubular assembly comprises a microstructure comprising a hard phase structure and a soft phase structure.

716. The method of claim 715, wherein prior to the radial expansion and plastic deformation, at least a portion of the tubular assembly comprises a microstructure comprising a transitional phase structure.

717. The method of claim 715, wherein the hard phase structure comprises martensite.

718. The method of claim 715, wherein the soft phase structure comprises ferrite.

719. The method of claim 715, wherein the transitional phase structure comprises retained austentite.

720. The method of claim 715, wherein the hard phase structure comprises martensite; wherein the soft phase structure comprises ferrite; and wherein the transitional phase structure comprises retained austentite.

721. The method of claim 715, wherein the portion of the tubular assembly comprising a microstructure comprising a hard phase structure and a soft phase structure comprises, by weight percentage, about 0.1% C, about 1.2% Mn, and about 0.3% Si.

722. The apparatus of claim 142, wherein at least a portion of the tubular assembly comprises a microstructure comprising a hard phase structure and a soft phase structure.

723. The apparatus of claim 722, wherein prior to the radial expansion and plastic deformation, at least a portion of the tubular assembly comprises a microstructure comprising a transitional phase structure.

724. The apparatus of claim 722, wherein the hard phase structure comprises martensite.

725. The apparatus of claim 722, wherein the soft phase structure comprises ferrite.

726. The apparatus of claim 722, wherein the transitional phase structure comprises retained austentite.

727. The apparatus of claim 722, wherein the hard phase structure comprises martensite; wherein the soft phase structure comprises ferrite; and wherein the transitional phase structure comprises retained austentite.

728. The apparatus of claim 722, wherein the portion of the tubular assembly comprising a microstructure comprising a hard phase structure and a soft phase structure comprises, by weight percentage, about 0.1% C, about 1.2% Mn, and about 0.3% Si.

729. A method of manufacturing an expandable tubular member, comprising:
providing a tubular member;
heat treating the tubular member; and
quenching the tubular member;
wherein following the quenching, the tubular member comprises a microstructure comprising a hard phase structure and a soft phase structure.

730. The method of claim 729, wherein the provided tubular member comprises, by weight percentage, 0.065% C, 1.44% Mn, 0.01% P, 0.002% S, 0.24% Si, 0.01% Cu, 0.01% Ni, 0.02% Cr, 0.05% V, 0.01% Mo, 0.01% Nb, and 0.01%Ti.

731. The method of claim 729, wherein the provided tubular member comprises, by weight percentage, 0.18% C, 1.28% Mn, 0.017% P, 0.004% S, 0.29% Si, 0.01% Cu, 0.01% Ni, 0.03% Cr, 0.04% V, 0.01% Mo, 0.03% Nb, and 0.01%Ti.

732. The method of claim 729, wherein the provided tubular member comprises, by weight percentage, 0.08% C, 0.82% Mn, 0.006% P, 0.003% S, 0.30% Si, 0.06% Cu, 0.05% Ni, 0.05% Cr, 0.03% V, 0.03% Mo, 0.01% Nb, and 0.01%Ti.

733. The method of claim 729, wherein the provided tubular member comprises a microstructure comprising one or more of the following: martensite, pearlite, vanadium carbide, nickel carbide, or titanium carbide.

734. The method of claim 729, wherein the provided tubular member comprises a microstructure comprising one or more of the following: pearlite or pearlite striation.

735. The method of claim 729, wherein the provided tubular member comprises a microstructure comprising one or more of the following: grain pearlite, widmanstatten martensite, vanadium carbide, nickel carbide, or titanium carbide.

736. The method of claim 729, wherein the heat treating comprises heating the provided tubular member for about 10 minutes at 790 °C.

737. The method of claim 729, wherein the quenching comprises quenching the heat treated tubular member in water.

738. The method of claim 729, wherein following the quenching, the tubular member comprises a microstructure comprising one or more of the following: ferrite, grain pearlite, or martensite.

739. The method of claim 729, wherein following the quenching, the tubular member comprises a microstructure comprising one or more of the following: ferrite, martensite, or bainite.

740. The method of claim 729, wherein following the quenching, the tubular member comprises a microstructure comprising one or more of the following: bainite, pearlite, or ferrite.

741. The method of claim 729, wherein following the quenching, the tubular member comprises a yield strength of about 67ksi and a tensile strength of about 95 ksi.

742. The method of claim 729, wherein following the quenching, the tubular member comprises a yield strength of about 82 ksi and a tensile strength of about 130 ksi.

743. The method of claim 729, wherein following the quenching, the tubular member comprises a yield strength of about 60 ksi and a tensile strength of about 97 ksi.

744. The method of claim 729, further comprising:
positioning the quenched tubular member within a preexisting structure; and
radially expanding and plastically deforming the tubular member within the preexisting structure.

745. The apparatus of claim 142, wherein at least a portion of the tubular assembly comprises a microstructure comprising a hard phase structure and a soft phase structure.

746. The apparatus of claim 745, wherein the portion of the tubular assembly comprises, by weight percentage, 0.065% C, 1.44% Mn, 0.01% P, 0.002% S, 0.24% Si, 0.01% Cu, 0.01% Ni, 0.02% Cr, 0.05% V, 0.01% Mo, 0.01% Nb, and 0.01%Ti.

747. The apparatus of claim 745, wherein the portion of the tubular assembly comprises, by weight percentage, 0.18% C, 1.28% Mn, 0.017% P, 0.004% S, 0.29% Si, 0.01% Cu, 0.01% Ni, 0.03% Cr, 0.04% V, 0.01% Mo, 0.03% Nb, and 0.01%Ti.

748. The apparatus of claim 745, wherein the portion of the tubular assembly comprises, by weight percentage, 0.08% C, 0.82% Mn, 0.006% P, 0.003% S, 0.30% Si, 0.06% Cu, 0.05% Ni, 0.05% Cr, 0.03% V, 0.03% Mo, 0.01% Nb, and 0.01%Ti.

749. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a microstructure comprising one or more of the following: martensite, pearlite, vanadium carbide, nickel carbide, or titanium carbide.

750. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a microstructure comprising one or more of the following: pearlite or pearlite striation.

751. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a microstructure comprising one or more of the following: grain pearlite, widmanstatten martensite, vanadium carbide, nickel carbide, or titanium carbide.

752. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a microstructure comprising one or more of the following: ferrite, grain pearlite, or martensite.

753. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a microstructure comprising one or more of the following: ferrite, martensite, or bainite.

754. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a microstructure comprising one or more of the following: bainite, pearlite, or ferrite.

755. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a yield strength of about 67ksi and a tensile strength of about 95 ksi.

756. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a yield strength of about 82 ksi and a tensile strength of about 130 ksi.

757. The apparatus of claim 745, wherein the portion of the tubular assembly comprises a yield strength of about 60 ksi and a tensile strength of about 97 ksi.

758. A method for manufacturing an expandable tubular member comprising:

providing a tubular member;

heat treating the tubular member;

quenching the tubular member; and

cold working the tubular member, whereby upon cold working, the yield strength of the tubular member is increased.

759. The method of claim 758 wherein the tubular member comprises a connection for an expandable tubular member.

760. The method of claim 758 wherein the yield strength increases from approximately 35 ksi to 80 ksi.

761. A method for expanding an expandable tubular member comprising:

providing a tubular member;

lubricating the tubular member; and

expanding the tubular member.

762. The method of claim 761 wherein the tubular member comprises a connection for an expandable tubular member.

763. A method for formability evaluation comprising:

selecting a first tubular member;

measuring a plurality of stress and strain property parameters for the first tubular member;

measuring a Charpy V-notch impact value parameter for the first tubular member;

measuring a stress rupture parameter for the first tubular member;

measuring a strain hardening exponent parameter for the first tubular member;

measuring a plastic strain ratio parameter for the first tubular member;

comparing the parameters measured for first tubular member to a plurality of desired parameters; and

selecting the first tubular member to manufacture an expandable tubular member if the measured parameters meet or exceed the desired parameters.

764. The method of claim 763 wherein the stress rupture parameter includes a parameter for burst.

765. The method of claim 763 wherein the stress rupture parameter includes a parameter for collapse.

766. The method of claim 763 wherein a tubular member with a plastic strain ratio parameter of greater than 1.0 will be more resistant to thinning and better suited to tubular expansion.

767. An expandable tubular member comprising:

a tensile strength in the range of 60 ksi to 120 ksi;

a yield strength in the range of 40 ksi to 100 ksi;

a yield strength to tensile strength ratio in the range of 50% to 85%;

a minimum elongation change due to radial expansion of 35%;

a minimum width reduction due to radial expansion of 40%;

a minimum thickness reduction due to radial expansion of 30%; and
a minimum anisotropy of 1.5.

768. The member of claim 767 further comprising:
a minimum flare expansion of 45%.

769. The member of claim 767 further comprising:
a minimum absorbed energy at negative 4 degrees Fahrenheit of 80 ft-lbs in the longitudinal direction, 60 ft-lbs in the transverse direction, and 60 ft lbs in the transverse weld area.

770. A method for transforming the yield strength of an expandable tubular member comprising:
providing a manufactured tubular member;
cold rolling the tubular member;
inter-critical annealing the tubular member;
expanding the tubular member; and
heating the tubular member.

771. The method of claim 770 wherein the tubular member comprises a dual steel composition comprising, by weight percentage, 0.12%C, 0.4%Si, 1.5% Mn, and 0.02%Nb.

772. An expandable tubular member comprising:
a tensile strength in the range of 80 ksi to 100 ksi;
a yield strength in the range of 60 ksi to 90 ksi;
a maximum yield strength to tensile strength ratio of 85%;
a minimum elongation change due to radial expansion of 22%;
a minimum width reduction due to radial expansion of 30%;
a minimum thickness reduction due to radial expansion of 35%; and
a minimum anisotropy of 0.8.

773. The member of claim 772 further comprising:
a minimum flare expansion of 45%.

774. The member of claim 772 further comprising:

a minimum absorbed energy at negative 4 degrees Fahrenheit of 80 ft-lbs in a longitudinal direction, 60 ft-lbs in a transverse direction, and 60 ft lbs in a transverse weld area.

775. An expandable tubular member comprising:

a tensile strength in the range of 60 ksi to 120 ksi;
a yield strength in the range of 40 ksi to 100 ksi;
a yield strength to tensile strength ratio in the range of 50% to 85%;
a minimum elongation change due to radial expansion of 35%;
a minimum width reduction due to radial expansion of 40%;
a minimum thickness reduction due to radial expansion of 30%; and
a minimum anisotropy of 1.5.

776. The member of claim 775 further comprising:

a minimum flare expansion of 75%.

777. The member of claim 775 further comprising:

a minimum absorbed energy at negative 4 degrees Fahrenheit of 80 ft-lbs in a longitudinal direction, 60 ft-lbs in a transverse direction, and 60 ft lbs in a transverse weld area.

778. A method for transforming the yield strength of an expandable tubular member comprising:

providing a manufactured tubular member;
inter-critical annealing the tubular member;
expanding the tubular member; and
heating the tubular member.

779. An expandable tubular member comprising:

a yield strength of approximately 77 ksi;
a tensile strength of approximately 83 ksi; and
an elongation of approximately 32%.

780. An expansion device comprising:

a surface;
a self lubricating hard coating on the surface; and
a self lubricating soft coating on the surface.

781. The device of claim 780 wherein the self-lubricating soft coating comprises film grease.

782. The device of claim 780 wherein the self lubricating soft coating comprises a lubricated mud.

783. The device of claim 780 wherein the self lubricating soft coating comprises a film grease and a lubricated mud.

784. The device of claim 780 wherein the member comprises a friction coefficient of not more than 0.05.

785. The device of claim 780 wherein the member comprises a friction coefficient of approximately 0.05.

786. The device of claim 780 wherein the member comprises a friction coefficient of approximately 0.075.

787. The device of claim 780 wherein the member comprises a friction coefficient of approximately 0.1.

788. The device of claim 780 wherein the member comprises a friction coefficient of approximately 0.125.

789. An expandable tubular member comprising:

a yield strength in the range of 40 ksi to 80 ksi;
a maximum yield strength to tensile strength ratio of 0.5;
a minimum elongation change due to radial expansion of 30%;
a minimum width reduction due to radial expansion of 45%;
a minimum wall thickness reduction due to radial expansion of 30%; and
a minimum anisotropy of 1.5.

790. An expandable tubular member comprising:

a friction coefficient of 0.02, whereby the member may be expanded by a force below 100000 lbs.

791. The member of claim 790 wherein the member has approximately a 6 inch diameter.

792. An expandable tubular member comprising:

a lubricant resulting in a friction coefficient of 0.125;

a wall thickness of approximately 0.305 inches; and

a required expansion force of approximately 146000 lbs, wherein the expansion force allows a diameter to thickness ratio of approximately 25 and a collapse strength of approximately 2400 ksi.

793. An expandable tubular member comprising:

a lubricant resulting in a friction coefficient of 0.0.075;

a wall thickness of approximately 0.350 inches; and

a required expansion force of approximately 143000 lbs, wherein the expansion force allows a diameter to thickness ratio of approximately 22 and a collapse strength of approximately 3250 ksi.

794. An expandable tubular member comprising:

a lubricant resulting in a friction coefficient of 0.02;

a wall thickness of approximately 0.450 inches; and

a required expansion force of approximately 150000 lbs, wherein the expansion force allows a diameter to thickness ratio of approximately 17 and a collapse strength of approximately 5800 ksi.

795. An expandable tubular member comprising:

a lubricant resulting in a friction coefficient of 0.02;

a wall thickness of approximately 0.5 inches; and

a required expansion force of approximately 126000 lbs, wherein the expansion force allows a diameter to thickness ratio of approximately 15 and a collapse strength of approximately 5350 ksi.

796. The member of claim 795 wherein the member includes a 55 ksi steel.

797. An expandable tubular member comprising:

a lubricant resulting in a friction coefficient of 0.02;

a wall thickness of approximately 0.5 inches; and

a required expansion force of approximately 127000 lbs, wherein the expansion force results in a diameter to thickness ratio of approximately 15 and a collapse strength of approximately 8400 ksi.

798. The member of claim 797 wherein the member includes a steel with a 55 ksi yield before expansion and a 100 ksi yield after expansion.

799. An expandable tubular member comprising:

a composition, by weight percentage, of 0.065% C, 1.44% Mn, 0.01% P, 0.002% S, 0.24% Si, 0.01% Cu, 0.01% Ni, 0.02% Cr, 0.04% V, 0.01% Mo, 0.03% Nb, and 0.01% Ti.

800. An expandable tubular member comprising:

a composition, by weight percentage, of 0.18% C, 1.28% Mn, 0.017% P, 0.004% S, 0.29% Si, 0.01% Cu, 0.01% Ni, 0.03% Cr, 0.03% V, 0.03% Mo, 0.01% Nb, and 0.01% Ti.

801. An expandable tubular member comprising:

a composition, by weight percentage, of 0.08% C, 0.82% Mn, 0.006% P, 0.003% S, 0.3% Si, 0.16% Cu, 0.05% Ni, 0.05% Cr, 0.06% V, 0.01% Mo, 0.03% Nb, and 0.01% Ti.

802. An expandable tubular member comprising:

a composition, by weight percentage, of 0.03% C, 1.48% Mn, 0.014% P, 0.002% S, 0.16% Si, 0.02% Cu, 0.01% Ni, 0.02% Cr, 0.06% V, 0.01% Mo, 0.03% Nb, and 0.01% Ti.

803. An expandable tubular member comprising:

after a 16% expansion, approximately a 21% change in yield strength, approximately a 24% change in yield ratio, approximately a 18% change in elongation percentage, approximately a 8% change in width reduction percentage, approximately a 15% change in wall thickness reduction percentage, and approximately a 4% change in anisotropy.

804. An expandable tubular member comprising:

after a 15.6% expansion, approximately a 70% change in yield strength, approximately a 25% change in yield ratio, approximately a 67% change in elongation

percentage, approximately a 28% change in width reduction percentage, approximately a 7% change in wall thickness reduction percentage, and approximately a 75% change in anisotropy.

805. An expandable tubular member comprising:

after a 24% expansion, approximately a 5% change in yield strength, approximately a 11% change in yield ratio, approximately a 20% change in elongation percentage, approximately a 43% change in width reduction percentage, approximately a 2% change in wall thickness reduction percentage, and approximately a 52% change in anisotropy.

806. An expandable tubular member comprising:

after a 24% expansion, approximately a 10% change in yield strength, approximately a 3% change in yield ratio, approximately a 30% change in elongation percentage, approximately a 13% change in width reduction percentage, approximately a 2% change in wall thickness reduction percentage, and approximately a 17% change in anisotropy.

807. An expandable tubular member comprising:

after a 24% expansion, approximately a 46% change in yield strength, approximately a 20% change in yield ratio, approximately a 91% change in elongation percentage, approximately a 15% change in width reduction percentage, approximately a 2% change in wall thickness reduction percentage, and approximately a 18% change in anisotropy.

808. An expandable tubular member comprising:

after a 16% expansion, approximately a 38% change in yield strength, approximately a 20% change in yield ratio, approximately a 11% change in elongation percentage, approximately a 9% change in width reduction percentage, approximately a 4% change in wall thickness reduction percentage, and approximately a 4% change in anisotropy.

809. An expandable tubular member comprising:

after a 24% expansion, approximately a 31% change in yield strength, approximately a 14% change in yield ratio, approximately a 48% change in elongation percentage, approximately a 13% change in width reduction percentage, approximately a

2% change in wall thickness reduction percentage, and approximately a 12% change in anisotropy.

810. An expandable tubular member comprising:

after a 24% expansion, approximately a 38% change in yield strength, approximately a 21% change in yield ratio, approximately a 55% change in elongation percentage, approximately a 16% change in width reduction percentage, approximately a 9% change in wall thickness reduction percentage, and approximately a 13% change in anisotropy.

811. An expandable tubular member comprising:

after a 16% expansion, approximately a 33% change in yield strength, approximately a 26% change in yield ratio, approximately a 30% change in elongation percentage, approximately a 15% change in width reduction percentage, approximately a 9% change in wall thickness reduction percentage, and approximately a 10% change in anisotropy.

812. An expandable tubular member comprising:

after a 24% expansion, approximately a 41% change in yield strength, approximately a 27 % change in yield ratio, approximately a 40% change in elongation percentage, approximately a 21% change in width reduction percentage, approximately a 16% change in wall thickness reduction percentage, and approximately a 5% change in anisotropy.

813. An expandable tubular member comprising:

a tensile strength of approximately 68 ksi before radial expansion;

a tensile strength of approximately 80 ksi after 16% radial expansion; and

a tensile strength of approximately 82 ksi after 24% radial expansion.

814. An expandable tubular member comprising:

a tensile strength of approximately 69 ksi before radial expansion;

a tensile strength of approximately 82 ksi after 16% radial expansion; and

a tensile strength of approximately 88 ksi after 24% radial expansion.

815. An expandable tubular member comprising:

a tensile strength of approximately 80 ksi before radial expansion;

a tensile strength of approximately 90 ksi after 16% radial expansion; and

a tensile strength of approximately 92 ksi after 24% radial expansion.

816. An expandable tubular member comprising:

a tensile strength of approximately 115 ksi before radial expansion;
a tensile strength of approximately 120 ksi after 15.2% radial expansion; and
a tensile strength of approximately 121 ksi after 25.2% radial expansion.

817. An expandable tubular member comprising:

a tensile strength of approximately 100 ksi before radial expansion; and
a tensile strength of approximately 26 ksi after 31.3% radial expansion.

818. An expandable tubular member comprising:

a tensile strength of approximately 114 ksi before radial expansion; and
a tensile strength of approximately 140 ksi after 15.6% radial expansion.

819. An expandable tubular member comprising:

upon quenching in water at approximately 775 °C, a tensile strength of 94 ksi and a yield strength of 56 ksi.

820. An expandable tubular member comprising:

upon quenching in water at approximately 790 °C, a tensile strength of 94 ksi and a yield strength of 59 ksi.

821. An expandable tubular member comprising:

upon quenching in water at approximately 735 °C, a tensile strength of 94 ksi and a yield strength of 59 ksi.

822. An expandable tubular member comprising:

upon quenching in oil at approximately 775 °C, a tensile strength of 84 ksi and a yield strength of 49 ksi.

823. An expandable tubular member comprising:

upon quenching in oil at approximately 820 °C, a tensile strength of 92 ksi and a yield strength of 61 ksi.

824. An expandable tubular member comprising:

upon quenching in oil at approximately 750 °C, a tensile strength of 109 ksi and a yield strength of 58 ksi.

825. An expandable tubular member comprising:

by weight percentage, 0.1% C, 1.5% Mn, and 0.3% Si.

826. The member of claim 822 further comprising:

martensite in the range of 15% to 30%.

827. An expandable tubular member comprising:

a yield strength of approximately 80 ksi, a yield strength to tensile strength ratio of approximately 0.86, a longitudinal elongation change due to radial expansion of approximately 14.8%, a width reduction due to radial expansion of approximately 38%, a wall thickness reduction due to radial expansion of approximately 43%, and an anisotropy of approximately 0.87.

828. An expandable tubular member comprising:

a yield strength of approximately 81 ksi, a yield strength to tensile strength ratio of approximately 0.83, a longitudinal elongation change due to radial expansion of approximately 14.9%, a width reduction due to radial expansion of approximately 38%, a wall thickness reduction due to radial expansion of approximately 43%, and an anisotropy of approximately 0.83.

829. An expandable tubular member comprising:

a yield strength of approximately 79 ksi, a yield strength to tensile strength ratio of approximately 0.82, a longitudinal elongation change due to radial expansion of approximately 15.9%, a width reduction due to radial expansion of approximately 44%, a wall thickness reduction due to radial expansion of approximately 43%, and an anisotropy of approximately 1.03.

830. An expandable tubular member comprising:

a yield strength of approximately 80 ksi, a yield strength to tensile strength ratio of approximately 0.83, a longitudinal elongation change due to radial expansion of approximately 15.3%, a width reduction due to radial expansion of approximately 40%, a wall thickness reduction due to radial expansion of approximately 43%, and an anisotropy of approximately 0.92.

831. An expandable tubular member comprising:

an elongation change due to radial expansion of approximately 21%, a width reduction due to radial expansion of approximately 35%, a wall thickness reduction due to radial expansion of approximately 38%, and an anisotropy of approximately 0.89.

832. An expandable tubular member comprising:

a yield strength of approximately 77 ksi, a yield strength to tensile strength ratio of approximately 0.82, a longitudinal elongation change due to radial expansion of approximately 16%, a width reduction due to radial expansion of approximately 32%, a wall thickness reduction due to radial expansion of approximately 45%, and an anisotropy of approximately 0.65.

833. An expandable tubular member comprising:

a yield strength of approximately 78 ksi, a yield strength to tensile strength ratio of approximately 0.8, a longitudinal elongation change due to radial expansion of approximately 16%, a width reduction due to radial expansion of approximately 31%, a wall thickness reduction due to radial expansion of approximately 45%, and an anisotropy of approximately 0.63.

834. An expandable tubular member, upon quenching and tempering, comprising:

a yield strength of approximately 84 ksi, a yield strength to tensile strength ratio of approximately 0.84, a longitudinal elongation change due to radial expansion of approximately 20.5%, a width reduction due to radial expansion of approximately 40%, a wall thickness reduction due to radial expansion of approximately 42%, and an anisotropy of approximately 0.94.

835. An expandable tubular member comprising:

a yield strength of approximately 80 ksi, a yield strength to tensile strength ratio of approximately 0.72, an elongation change due to radial expansion of approximately 35%, a width reduction due to radial expansion of approximately 35%, a wall thickness reduction due to radial expansion of approximately 33%, and an anisotropy of approximately 0.92.

836. The member of claim 835 wherein the member is processed comprising the steps of hot stretching, reducing at approximately 1950 °C, and rotary straightening.

837. An expandable tubular member comprising:

a yield strength of approximately 90 ksi, a yield strength to tensile strength ratio of approximately 0.88, an elongation change due to radial expansion of approximately 25%, a width reduction due to radial expansion of approximately 22%, a wall thickness reduction due to radial expansion of approximately 20%, and an anisotropy of approximately 1.1.

838. The member of claim 837 wherein the member is processed comprising the steps of normalization at approximately 1850 °C, cold drawing, annealing at approximately 1050 °C, and rotary straightening.

839. An expandable tubular member comprising:

a yield strength of approximately 88 ksi, a yield strength to tensile strength ratio of approximately 0.87, an elongation change due to radial expansion of approximately 16%, a width reduction due to radial expansion of approximately 24%, a wall thickness reduction due to radial expansion of approximately 30%, and an anisotropy of approximately 0.76.

840. The member of claim 839 wherein the member is processed comprising the steps of hot stretching, reducing at approximately 1950 °C, cold drawing, annealing, and rotary straightening.

841. An expandable tubular member comprising:

a yield strength of approximately 48 ksi, a yield strength to tensile strength ratio of approximately 0.73, an elongation change due to radial expansion of approximately 38%, a width reduction due to radial expansion of approximately 43%, a wall thickness reduction due to radial expansion of approximately 49%, and an anisotropy of approximately 0.83.

842. The member of claim 841 wherein the member is processed comprising the steps of hot stretching, reducing at approximately 1850 °C, and rotary straightening.

843. An expandable tubular member comprising:

a yield strength of approximately 46 ksi, a yield strength to tensile strength ratio of approximately 0.69, an elongation change due to radial expansion of approximately 40%, a width reduction due to radial expansion of approximately 50%, a wall thickness reduction due to radial expansion of approximately 53%, and an anisotropy of approximately 0.93.

844. The member of claim 843 wherein the member is processed comprising the steps of hot reducing at approximately 1850 °C, cold sizing, and rotary straightening.

845. An expandable tubular member comprising:

a yield strength of approximately 53 ksi, a yield strength to tensile strength ratio of approximately 0.85, an elongation change due to radial expansion of approximately 49%, a width reduction due to radial expansion of approximately 49%, a wall thickness reduction due to radial expansion of approximately 46%, and an anisotropy of approximately 1.1.

846. The member of claim 845 wherein the member is processed comprising the steps of hot stretching, reducing at approximately 1850 °C, and rotary straightening.

847. An expandable tubular member, upon quenching and tempering, comprising:

after a flare expansion of 42%, an absorbed energy in the longitudinal direction of 125, an absorbed energy in the transverse direction of 59 ft-lbs, and an absorbed energy in the weld of 176 ft-lbs.

848. An expandable tubular member, upon quenching and tempering, comprising:

after a flare expansion of 52%, an absorbed energy in the longitudinal direction of 145 ft-lbs, an absorbed energy in the transverse direction of 59, and an absorbed energy in the weld of 174 ft-lbs.